WHAT IS CLAIMED IS:

1. A magnetic recording medium comprising a non-magnetic base material and a ferromagnetic metal layer of a cobalt based alloy formed on top of said non-magnetic base material with a metal underlayer disposed therebetween, wherein a coercive force Hc is at least 2000 (Oe), and an anisotropic magnetic field Hk^{grain} is at least 10,000 (Oe).

2. A magnetic recording medium according to claim 1, wherein said metal underlayer and said ferromagnetic metal layer are formed in a film fabrication chamber with an ultimate vacuum at a 10^{-9} Torr level, using a film fabrication gas with an impurity concentration of no more than 1 ppb.

3. A magnetic recording medium according to either one of claim 1, wherein said metal underlayer incorporates an underfilm of either one of Cr and a Cr alloy, and said Cr alloy also incorporates Mo and/or W.

4. A magnetic recording medium according to either one of claim 1, wherein said metal underlayer incorporates an underfilm of either one of Cr and a Cr alloy, and said Cr alloy incorporates one, or two or more elements selected from a group consisting of V, Nb, Hf, Zr, Ti, Mn, Ta, Ru, Re, Os, Ir, Rh, Pd, Pt, P, B, Si, Ge, N and O.

5. A magnetic recording medium according to any one of claim 1, wherein a film thickness of said metal underlayer is within a range from 3 nm to 20 nm.

6. A magnetic recording medium according to any one of claim 1 through claim 5, wherein said metal underlayer comprises a layered structure of two or more underfilms with different lattice constants.

7. A magnetic recording medium according to claim 6, wherein said metal underlayer is a two layered construction with a second underfilm layered on top of a first underfilm, and a film thickness ratio t_2/t_1 of a film thickness t_1 of said first underfilm and a film thickness t_2 of said second underfilm is within a range from 0.2 to 5.0.

8. A magnetic recording medium according to claim 7, wherein a film thickness of said first underfilm is within a range from 1.5 nm to 8.5 nm.

9. A magnetic recording medium according to either one of claim 7, wherein a film thickness of said second underfilm is within a range from 1.5 nm to 8.5 nm.

10. A magnetic recording medium according to any one of claim 1, wherein a lattice misfit of said metal underlayer and said ferromagnetic metal layer, as determined by an equation $(y-x) / (x/2 + y/2) \cdot 100(\%)$, in which x represents a length obtained by multiplying by $\sqrt{2}$ a lattice constant of said metal underlayer and y represents a c axis length of a crystal lattice of said ferromagnetic metal layer, is a value from 0.5% to 2.5%.

11. A magnetic recording medium according to claim 10, wherein said lattice misfit of said metal underlayer and said ferromagnetic metal layer is a value from 0.5% to 1.5%.

12. A magnetic recording medium according to any one of claim 1, wherein in a crystal lattice of said ferromagnetic metal layer of said cobalt based alloy, an interatomic distance a in a direction of a normal line to said ferromagnetic metal layer is larger than an interatomic distance b in a direction within a plane of said ferromagnetic metal layer.

13. A magnetic recording medium according to claim 12, wherein an axial length ratio a/b of said interatomic distance a in a direction of a normal line to said ferromagnetic metal layer relative to said interatomic distance b in a direction within a plane of said ferromagnetic metal layer is within a range from 1.002 to 1.008.

14. A method of producing a magnetic recording medium in which a ferromagnetic metal layer of a cobalt based alloy is formed by a film fabrication method on top of a non-magnetic base material with a metal underlayer disposed therebetween, wherein in order to achieve a coercive force Hc of at least 2000 (Oe) and an anisotropic magnetic field Hk^{grain} of at least 10,000 (Oe), a lattice misfit of said metal underlayer and said ferromagnetic metal layer, as represented by an equation $(y-x) / (x/2 + y/2) \cdot 100$ (%), in which x represents a length obtained by multiplying by $\sqrt{2}$ a lattice constant of said metal underlayer and y represents a c axis length of a crystal lattice of said ferromagnetic metal layer, is set to a value from 0.5% to 2.5%.

15. A method of producing a magnetic recording medium according to claim 14, wherein in order to control said lattice misfit, either one of a positive and a negative bias of 0 V to 300 V is applied to said base material during film fabrication of said metal underlayer.

16. A method of producing a magnetic recording medium according to either one of claim 14 and claim 15, wherein in order to control said lattice misfit, either one of a positive and a negative bias of 0 V to 300 V is applied to said base material during film fabrication of said ferromagnetic metal layer.

17. A magnetic recording device comprising a magnetic recording medium according to any one of claim 1 through claim 13, a drive section for driving said magnetic recording medium, and a magnetic head for carrying out recording and playback of magnetic information, wherein said magnetic head performs recording and playback of magnetic information on a moving said magnetic recording medium.